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Volume 15
Numbers 6/7

June/July 1989

ISSN: 0095-2699

Early Results of the LISA Program

by J. Patrick Madden and Paul O'Connell

Overview

USDA's research and education grants program known as LISA (Low-Input/Sustainable Agriculture) responds to an emerging interest by many farmers for a more cost-effective and environmentally benign agriculture. There is growing public concern about groundwater contamination, pesticide residues in foods, high cost of modern-day agriculture, soil health, and lack of crop diversity for wildlife habitat. LISA research and education projects are designed to help farmers substitute management, scientific information, and on-farm resources for some of the purchased inputs they currently depend on for their farming enterprises.

The LISA program has also responded to a Congressional mandate to involve a broader spectrum of the agricultural community in administering the program and carrying out the projects. Innovative methods are being used to enable scientists, educators and farmers to work as teams in selecting projects to be funded, setting research goals, designing and implementing the projects, and devising strategies to ensure that the findings are made readily usable to producers and other audiences.

The program is administered through host institutions in four regions—University of Vermont for the Northeast, University of Nebraska for the North Central, University of Georgia for the Southern, and University of California for the Western region, as described in the boxes on the following pages. LISA project proposals are reviewed in each region by committees that include farmers, State Experiment Station researchers, educators in the Cooperative Extension Service, Soil Conservation Service personnel, Agricultural Research Service scientists, and others.

Scores of farmers who are successfully using low-input/sustainable farm-



Larry Newton of the University of Georgia uses a thermometer to check the activity in a pile of composted manure. Researchers are testing various composting techniques that destroy disease organisms in manure solids. Use of composted biological matter is an important aspect of low-input agriculture. USDA photo no. 89BW1239-35, by Rob Flynn for the Agriculture Research Service (ARS).

ing methods of pest control and soil fertility management have become actively involved as members of project teams in preparing LISA project proposals. On-farm experiments are being designed and carried out by these project teams, using scientific methods for setting up treatment plots and measuring the outcomes such as crop yields, soil conditions, and the populations of pests and their natural enemies. These on-farm studies are essential to the success of the program, in that they bring together the findings obtained from laboratory and experiment station research. Together these studies are beginning to provide the reliable, scientific information a farmer must have to design a profitable strategy for reducing the farm's dependence on certain kinds of off-farm inputs.

Even though the LISA program has received a total of only \$8.35 million for its first two years of operation, an amazingly large and diverse array of scientists, educators, farmers, and other interested persons in the public and private sectors have already become actively involved. And despite the short time it has been in existence—since January 1988—meaningful results are becoming evident. Early findings from some of these LISA projects are summarized later in this report. Additional findings from other research and examples of commercial-scale farms that are successfully using low-input methods are presented to further illustrate the kinds of outcomes anticipated through the LISA program.

Genesis of the LISA Program

The LISA program was created in response to the 1985 Food Security Act, Subtitle C—Agriculture Productivity Research. In 1986 USDA policymakers began having discussions with farmers and other proponents of farming systems having reduced reliance on synthetic chemicals and other off-farm purchased inputs. They visited the Rodale Research Center near Emmaus, Pennsylvania, and toured Dick and Sharon Thompson's farm near Boone, Iowa. They attended a conference of interested scientists, farmers, foundations, and public agencies in Racine, Wisconsin, and held informal discussions with many experts and practitioners of various low-input alternative farming methods.

The policymakers found farmers were looking for ways to increase their net returns while reducing risks and achieving greater compatibility between environmental and production goals. They also found that a handful of dedicated researchers in the universities and in the private sector were already studying scientific components essential to the success of these low-input farming systems, despite extremely limited funding. It became abundantly clear that federal funding was urgently needed to support private and public research and educational efforts to enhance the productivity and profitability of low-input farming methods and systems.

Throughout 1987, congressional contacts were established and hearings were held on this important subject. Because of widespread public concern about groundwater contamination and human health risk associated with pesticides and nitrate fertilizers, this initiative was strongly supported by several members of Congress. Consequently the program received its initial \$3.9 million appropriation in December of 1987. In January of 1988, the Secretary of Agriculture issued a memorandum establishing Departmen-

Low-Input/Sustainable Agriculture (LISA)

What is It?

LISA (Low-Input/Sustainable Agriculture) is designed to help farmers substitute management, scientific information, and on-farm resources for some of the purchased inputs they currently depend on for their farming enterprises. LISA techniques include rotations, crop and livestock diversification, soil and water conserving practices, mechanical cultivation, and biological pest controls. LISA responds to the farmer's need for a more cost-effective and environmentally benign agriculture.

The Goal of LISA

LISA's goal is to farm profitably while conserving our natural resources and protecting the environment. The LISA concept is now gaining attention from U.S. farmers and nonfarmers who are concerned about everything from contamination of water by agricultural chemicals and pesticide residues on food to the persistent strain on profit due to rising production costs.

When Was LISA Started?

LISA was first authorized in the Food Security Act of 1985 (in a small section on Agricultural Productivity Research); the program didn't begin until FY 1988 when Congress first appropriated \$3.9 million for low-input research and education.

What is the LISA Program?

It is a small program to support the development and communication, mainly to farmers, of reliable facts and information about low-input farming. The program is carried out largely at the regional level. Each of four U.S. regions has a host institution and procedures for inviting, reviewing, and approving project proposals from teams made up of farmers, representatives of private organizations, public agencies, and university research and education staff.

How Much Has Been Appropriated for LISA?

Congress increased the \$3.9 million funding for FY 1988 to \$4.45 million in FY 1989. No recommendation for funding of this program is included in the President's proposed budget for FY 1990.

How Many LISA Projects are Now Supported?

In FY 1988, some 53 projects were approved out of 371 proposals received. At this date, two regions, the Northeast and the South, have completed their review and selection of projects for support in FY 1989. These regions have each approved 8 new projects and renewed funding for 5 of the projects initiated last year.

tal policy regarding alternative (now termed low-input/ sustainable) farming systems:

The Department encourages research and education programs and activities that provide farmers with a wide choice of cost effective farming systems including systems that minimize or optimize the use of purchased inputs and that minimize environmental hazards. The Department also encourages efforts to expand the use of such systems.

The LISA program has been organized and directed by the Cooperative State Research Service (CSRS) with the full cooperation of Extension Service and participation by various other USDA agencies, especially Soil Conservation Service, Agricultural Research Service, and the National Agricultural Library. The program has unfolded very rapidly. Whereas it normally takes at least 12 to 18 months to establish a new federal program of this kind, in just six months a set of administrative guidelines were developed, technical committees and administrative councils were formed in each of the four regions, hundreds of project proposals were submitted and reviewed, and the first round of projects were approved for funding. These projects encompass a wide range of subject matter germane to low-input/sustainable agriculture.

The LISA program has also proven to be responsive to the Congressional intent regarding involvement of a wide range of public and private organizations. Specifically, the program has meaningful involvement of farmers, interdisciplinary cooperation in research activities, functional integration of research and extension, and a significant share of funds has been allocated to thirteen private research and education organizations.

A total of 371 projects were submitted to the four regional host institutions. The review committees determined that 130 of these proposals were acceptable in terms of relevance to the goals of LISA, appropriate methods, and feasible plans for making the findings readily usable to farmers. Of these 130 acceptable projects, the best 53 were selected for funding. Several similar proposals were combined to form a total of 49 projects. If more funding had been available, an additional 77 projects would have been funded. The total cost of fully funding the 130 acceptable proposals in 1988 would have been \$16.6 million—roughly five times the amount available.

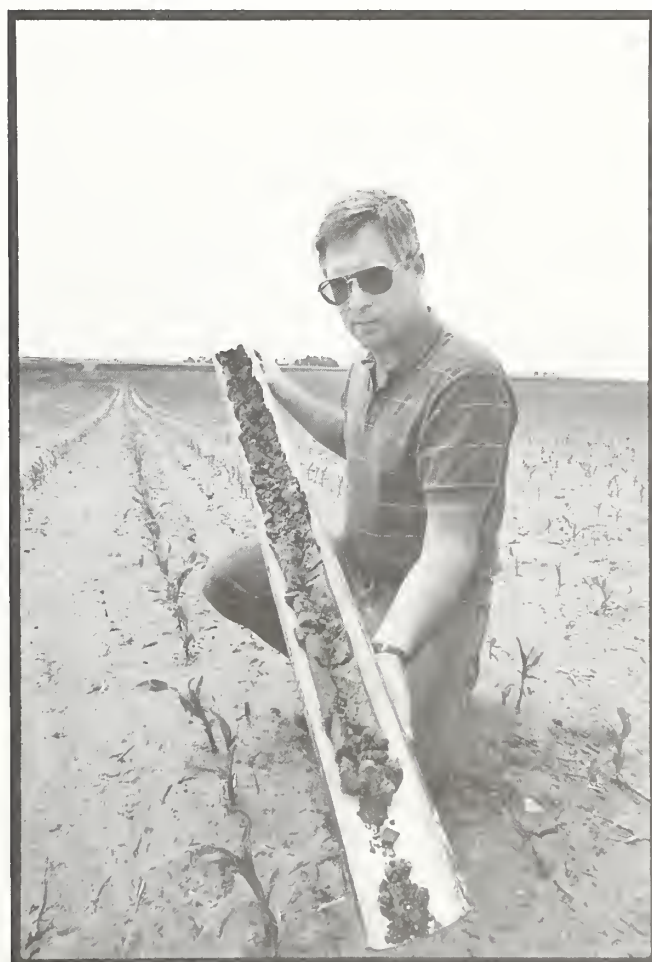
In fiscal year 1989, Congress appropriated \$4.45 million for LISA, a 14 percent increase over 1988. The North Central and Western regions will complete their project selections by June. The Northeast and Southern regions have each approved 8 new projects and have renewed funding for 5 of last year's projects. If more funding had been available, an additional 31 projects would have been funded in these two regions, for a total of \$8.7 million, including projects that were funded. Thus, the shortfall of funding to support all acceptable LISA proposals is running about the same level as last year, about five-fold.

Most of the LISA projects funded are long-term studies requiring several years development and replication before scientifically meaningful results can be obtained. A few of

the LISA projects have added to on-going studies, by providing resources for additional treatments, more measurements of soil and biological attributes, economic evaluation, and more effective means of getting the findings out to farmers. Other projects are of a short-term nature, such as preparation of video tapes demonstrating methods like ridge tillage and composting, preparation of computer software, or other approaches for presenting already known findings and forthcoming results in ways that will be readily usable to farmers and other clientele. Findings of some of these projects are summarized briefly here.

Field Crops Production

The farm press has begun featuring stories of farmers who are successfully using low-input methods. For example, the December 1988 issue of *Farm Journal* carried an article, "Taking the Low Road," which describes two of these farmers, Don Elston of Ohio and Joe Federer of Indiana. Joe said his move to low-input methods was motivated by his concern about possible effects of chemicals on human health. Using practices such as crop rotations, cover crops,



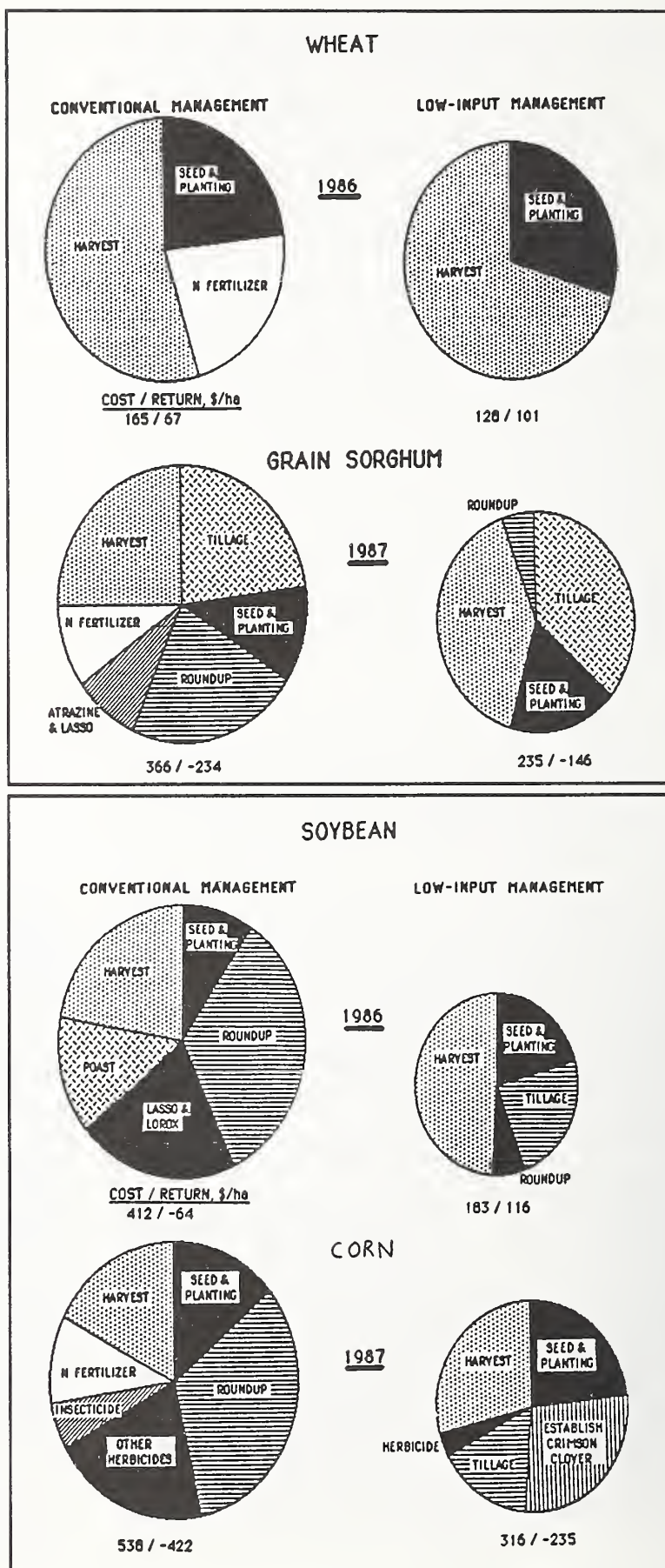
Dr. Doug Karlen, ARS Soil Tilth Research Laboratory, Ames, Iowa, holds a soil sample taken from the Thompson farm near Boone, Iowa. It will be examined to develop a soil profile of the organic matter, texture, microbes, and areas of ionization that show which way water flows through it, horizontally or vertically. USDA photo no. 89BW1229-14, by Lowell Georgia for ARS.

cultivation, and rotary hoeing, these farmers have reduced their fertilizer costs by \$17 and \$34 per acre, respectively.

Farmer awareness of low-input opportunities is also increased by hands-on experience. Thousands of farmers each year attend field days on farms with demonstration plots comparing low-input and conventional methods. For example, visitors to Dick and Sharon Thompson's farm saw side-by-side comparisons of conventional and low-input farming practices. Methods such as ridge tillage, legume-based rotations, and an integrated crop-livestock system produces yields at or above county averages with substantial reductions in cost and soil erosion.

Several projects funded by the LISA program are providing a scientific basis for understanding the productivity of low-input systems. For example, experimental plots comparing conventional and low-input crop rotations were started by Larry King in 1986 at North Carolina State University. With LISA funding, his study was expanded to include several additional disciplines. The additional tests and treatments including investigation of weed management strategies such as allelopathy, a natural weed control; soil moisture relations; soil insects, nematodes, and microbiology; cycling of nitrogen, carbon, and phosphorus; economics and extension. Three years of yield data (1986-88) have been submitted in his first progress report. All three years were characterized as having summer droughts. Corn yields in low-input plots were found to be lower than those of conventional (pesticide-based) crop rotations, but higher than conventionally produced continuous corn.

Costs and net returns from corn, soybeans, grain sorghum and wheat were calculated for each treatment for 1986 and 1987. Net returns were higher in virtually all the low-input plots than in the conventional plots. Because of the drought, the net returns were negative, as shown in the pie charts. The size of the circles represents the production cost. Conventional management in this experiment is no-till production, with heavy reliance on herbicides. Low-input methods rely primarily on crop rotations and mechanical cultivation for weed control, and on legumes for nitrogen. The chart for corn shows that the production cost on the conventional plots in 1987 was \$538 per hectare, compared with \$316 on the low-input corn plots. The conventional corn plots incurred a net loss of \$422 per hectare, compared with a net loss of \$235 in the low-input plots. The most dramatic contrast was in soybeans during 1986, when the net return from the conventional



Source of the pie charts at right: Larry D. King, "Low-Input Cropping System Experiment," Department of Soils, North Carolina State University, Raleigh, NC, First Annual Progress Report on LISA Project, January 1989. 13 p.

plots averaged a loss of \$64, compared with a profit of \$116 per hectare under low-input management. As in the other long-term studies more years of data will be required before definitive conclusions can be established.

The Spray Brothers farm in Ohio is 720 acres with a beef herd of 40 to 50 head. They have used no herbicides, lime or fertilizers on their farm since 1971. Nonetheless, their crop yields are above county averages: corn, 32% above average; soybeans, 40%; wheat, 5%; oats, 22%. Clover hay yield is 6 tons per acre (no county average for comparison). The Sprays receive premium "organic" prices for most of their crops and some of the beef.

Another illustration is the Sabot Hill farm near Richmond, Virginia, operated by Sandy Fisher. The farm is 3,480 acres, half of which is forest. They have about 500 head of beef cattle. Over the years, his major problem in production of corn and soybeans, his primary cash crops, has been the tendency of johnsongrass to take over several of his fields. A number of years ago this weed began exhibiting resistance to herbicides, therefore requiring higher costs for chemical weed control, but with decreasing effectiveness. Fisher shifted from chemical control to a cultural practice of overseeding his johnsongrass-infested fields with legumes. After harvesting hay crops from these fields for two or three years, he finds that the johnsongrass becomes depleted, so he can resume planting row crops without using herbicides. As a result of this change in practices, his herbicide cost has been

reduced by \$20,000 per year, and he is now achieving better control of the weeds.

A team of scientists at South Dakota State University started a crop rotation study in 1985, comparing conventional, a choice of ridge tillage or minimum tillage, and low-input crop rotations (Dobbs and Mends). The study now includes experimental plots at two locations, Watertown and Madison. When this study became a LISA project in 1988, the scope of investigations was expanded to include whole-farm studies on several cooperating farms, biological control of pests, nutrient cycling, and soil properties. Economists on the project team have adapted the experimental findings from the first three years experimentation to develop preliminary estimates of the net returns that would be earned by a typical family farm of 540 tillable acres.

During the drought of 1988, the only systems tested in this South Dakota study that were estimated to earn a profit were the low-input systems. At the Watertown site the low-input farming system was estimated to earn a profit of about \$4,900, using a crop rotation of oats, alfalfa, soybeans, and spring wheat. The simulated farms using a conventional rotation (corn, soybeans, and spring wheat) with chemical pesticides and conventional tillage, incurred a net loss of about \$23,000 and \$25,000, respectively—a difference of about \$30,000 compared with the low-input system. At the Madison site, the differences were much smaller. The low-input system was estimated to break even, while the mini-



Farmer Dick Thompson drives a Buffalo Ridge Tiller with disks for fertilizer side dress application. Metal shields keep the soil from flopping over the small corn plants. USDA photo no. 89BW1230-9, near Boone, Iowa, by Lowell Georgia for ARS.

The Agriculture Productivity Act

The Agriculture Productivity Act was passed by Congress in 1985, as part of the Food Security Act, P.L. 99-198. This act provided the authority to conduct research and education programs in alternative farming systems—often referred to as low-input, or sustainable. In December 1987, Congress appropriated \$3.9 million to begin work under this act. Low-input technologies provide opportunities to reduce the farmer's dependence on certain kinds of purchased inputs in ways that increase profits, reduce environmental hazards, and ensure a more sustainable agriculture for generations to come.

The Agriculture Productivity Act mandates scientific investigation to:

- enhance agricultural productivity
- maintain land productivity
- reduce soil erosion and loss of water and nutrients
- conserve energy and natural resources.

mum tillage and conventional systems lost about \$15,000.

Another study in South Dakota has devised an improved method for control of corn rootworm. Corn rootworm control constitutes one of the largest single insecticide markets in US agriculture. During 1988, insecticide was applied to about 35 percent of the corn acreage in the ten corn belt states, representing a total of 18.7 million acres (Economic Research Service, 1989). Farmers typically apply a granular insecticide, usually an organophosphate, at planting time. This granular material is vulnerable to movement by wind and water erosion, possibly posing a significant risk to groundwater and surface water. Scientists estimate this material kills only about 50 percent of the corn rootworm larvae, which is the stage of the pest that does the major damage to the roots of the corn plants (Sutter, personal correspondence). In mid summer, an aerial spray of insecticide is often applied to control the surviving adult corn rootworms. While this spray is highly effective in killing corn rootworm adults, it also kills beneficial species including natural enemies of various pests, thus causing secondary infestations.

In an effort to reduce the environmental impact and protect water quality risk associated with control of corn rootworm, Agricultural Research Service scientists Lance and Sutter (1989) in South Dakota have devised a bait that is a starch crystal containing about two teaspoons per acre of an insecticide, carbaryl. While this is only about 2 percent of the normal dosage, tests in the laboratory and in field cages under controlled conditions have found that the bait kills up to 94 percent of the adult corn rootworms, with no harm to non-target species. The bait contains two kinds of semiochemicals (behavioral modification chemicals). The first is an attractant that lures the adult corn rootworms (both males and females) to find the starch granules scattered about the field. The second semiochemical is a feeding stimulant made from a bitter herb that is delicious to the corn root worm but repugnant to most non-target species such as birds. Plans are now being developed for a full-scale

1988 Senate and House Appropriation Language

Growing numbers of farmers are looking for reliable information on reduced input systems to:

- reduce cost
- control erosion
- abate pollution from
 - heavy fertilization and pesticide use
 - monoculture cropping systems

Priority is given to provide information to farmers in readily usable form so that past and ongoing research can be applied immediately.

The Cooperative State Research Service is directed to coordinate activities by assuring participation of:

1. private foundations
2. land-grant institutions
3. nonprofit organizations
4. Extension Service
5. Agricultural Research Service
6. local farmer groups
7. Soil Conservation Service

The sum of \$8.35 million has been appropriated for the first 2 years of this joint program.

field test of the bait under actual farming conditions in several states.

Fruit Production

As part of a multi-state LISA project, scientists at Cornell (Dennehy *et al.*, 1989) have successfully tested a non-pesticide method of reducing the population of a major pest of grapes (the grape berry moth, GBM) by using pheromone (sex hormone) devices to disrupt the mating behavior of adult males. Test plots of grapes have been established on several farms, including seven vineyards in 1988. "Twisties" that emit a pheromone are attached to selected vines. In comparison plots, the conventional practice of spraying insecticide two to four times per season was followed by the farmers. The pheromone treatment suppressed GBM populations below the economic threshold of damage in virtually all plots over a four year period, providing results not significantly different from the chemically treated plots. The added advantage of the pheromone treatment in comparison to the use of chemical pesticides is that it does not decimate populations of beneficial species, including natural enemies of pests. While these results are very encouraging, the scientists caution that more years of testing are required under a wide range of conditions before the efficacy of this method can be established.

Steven Pavich and Sons, with 2,200 acres of vineyard in California and Arizona, produces over 30 million pounds of fresh table grapes a year, or about 2.4 percent of the nation's total production. While 85 percent of their acreage is certified for organic production under California law, only about 40 percent of their grapes are sold under the Pavich brand name, meaning they are "organically grown" and Nutriclean certified as pesticide free. The Pavichs apply about 8,000 tons of composted steer manure as the main source of soil nutrients. They have not sprayed any synthetic

Background of the LISA Program

Conventional agriculture involves highly specialized systems which emphasize high yields achieved by inputs of fertilizers, pesticides, and other off-farm purchases. Alternative farming systems, on the other hand, range from systems with only slightly reduced use of these inputs (through soil tests, integrated pest management, and capital inputs) to systems that seek to minimize their use (through appropriate rotations, ridge tillage, integration of livestock with crops, mechanical/biological weed control, and less costly buildings and equipment). Low-input/sustainable agriculture addresses multiple objectives—from increasing profits to maintaining the environment—and may incorporate and build on multiple systems and practices such as integrated pest management and crop rotations.

However, the conventional approach, in its emphasis on modernizing agriculture, features a capital-intensive system, continuous cropping, and a substantial reliance on manufactured inputs and extensive use of credit. Conventional agriculture also stresses production—that is, "more is better." Yet, agricultural economists point out that the most profitable output on a farm is usually something less than maximum physical output, and at some point dollar returns from higher increments of output may not cover additional costs.

Factors fostering the development and expansion of conventional agriculture have included:

- relatively low-priced petrochemicals & fertilizers
- ample credit
- suitable infrastructure
- availability of research-based information and education assistance from land-grant colleges and USDA
- farm price and income support policies
- other public programs.

While not ignoring resource conservation or environmental quality, the conventional approach tends to view them as constraints on profit maximization. For example, soil conservation has traditionally played second to production. However, when soil conservation and protection of the environment is socially desirable but not profitable for the farmer, the Government has provided financial and technical assistance.

In low-input or sustainable agriculture, farmers look for complements between conservation and production goals. Rotations can serve both goals. Average annual soil erosion from land planted in one year to corn, but the previous year to hay or a legume crop, is less than the erosion from the same land used to grow corn continuously. Rotations break cycles of crop-specific diseases and pests. When there are legumes in the rotations, nitrogen is synthesized into the forms used by crops.

chemical pesticide in any of their vineyards since 1986. That year a newly purchased vineyard in transition was sprayed once. Their major strategy for pest control is to maintain a ground cover of native weeds, grasses, and legumes between

USDA Activities

1. March 8, 1987: Orville G. Bentley, Assistant Secretary for Science and Education, established a task force on alternative farming systems to:

- explore implications to the Department of the growing interest in this topic
- recommend actions for dealing with Subtitle C of the Productivity Act in 1985 Food and Security Act.

2. November 5, 1987: Dr. Bentley formed the Research and Education Subcommittee on Alternative Farming Systems.

Membership includes:

- Agricultural Research Service
- Agricultural Stabilization and Conservation Service
- Cooperative Extension System
- Cooperative State Research Service
- Economic Research Service
- National Agricultural Library
- Soil Conservation Service
- Other USDA agencies that have an interest
- Extension Committee on Organization and Policy (ECOP)
- Experiment Station Committee on Organization and Policy (ESCOP)
- Private institutions

Responsibilities:

- recommend policy
- establish procedures for awarding funds
- coordinate research and extension activities

3. January 1988: Highlights of the Secretary's Memorandum:

Purpose

- support for research and education programs in alternative farming systems (sustainable agriculture)

Background

- recognizes issue
- traditional solution of increased production has problems
- potential for positive effects on income and environment.

Definition

- recognizes range of opportunities

Policy

- need for farmers to have choices, including systems that minimize use of purchased inputs

Leadership

- designated to Assistant Secretary for Science and Education
- coordinated by USDA Research and Education Committee

the rows to provide a habitat and food source for natural enemies of the pests.

Experiments at the University of Georgia Plant Science Farm include three methods of controlling fungus disease in peaches: organic, low-input, and conventional (Hendrix et

USDA Responsibilities Occurring at the National Level

- Administer alternative/low-input program
- Establish operating guidelines for regions
- Approve "Annual Plan of Work" submitted by each region
- Maintain Alternative Farming Systems Information Center at the National Agricultural Library
- Prepare required reports

Administrative Guidelines Provided Regions:

- matching contributions
- indirect costs not allowed
- tuition reimbursement not allowed
- funding to regions based on annual plan of work
 - Phase I funding for developing each region's plan of work
 - Phase II funding for regions to implement projects
- dollars routed through a host institution in each region

Structure

Each of the four regions has an administrative council and a technical committee.

Regional Administrative Council

- membership representation from:
 - Agricultural Research Service
 - Cooperative Extension Service
 - State Agricultural Experiment Stations
 - private research and education organizations
 - Soil Conservation Service
 - producers
- responsibilities
 - overall policy formulation at regional level
 - appoint technical committee
 - ensure involvement of all eligible institutions
 - review & approve technical committee actions
 - submit plan of work to USDA

Regional Technical Committee

- membership
 - appointed by Administrative Council
 - includes researchers, extension specialists, producers, and farm management experts
- responsibilities
 - key action level of regional programs
 - integrate activities of participating institutions
 - establish goals & criteria for selection projects
 - prepare regional plan of work, including:
 - objectives & short descriptions of projects
 - annual budgets
 - timeframe for completion
 - list of project personnel and institutions
 - prepare input to national annual report, including:
 - evaluation of project activity
 - further research and education needs.

with fungicide; the low-input option was spraying alternate rows rather than every row. Brown rot was controlled equally well with all three treatments. Control of two other pests (catfacing insects and curculio) was slightly less efficacious in the organic treatment, with differences ranging from 2 to 5 percent. The low-input (alternate row) method of spraying provided slightly better efficacy than conventional spraying to control a very heavy infestation of plum curculio and a moderate population of plant bugs.

In another portion of this study, apple orchard scouting techniques proved ineffective in reducing sprays for two fungus diseases, sooty blotch and fly speck. Spraying every two weeks (5 applications) between May 15 and August 1 was ineffective in preventing these diseases. However, a post-harvest method of removing fungus from the fruit was found to be very effective: 15 minutes soaking in bleach (0.0525% sodium hypochlorite). These results suggest that fungicide use could be replaced by post-harvest application of a rather harmless substance to the fruit.

In experimental plots of strawberries near Lubbock Texas, scientists are comparing conventional chemical fumigation of the soil versus solarization to control nematode pest populations and weeds (Patten et al., 1989). Solarization is a process of covering the soil with two layers of polyethylene separated by a dead air space, and allowing the sun to heat the soil to kill pests. Nematode populations were reduced 85-90 percent by solarization, compared with 90-95 percent control by chemical fumigation. Similar experiments in eastern Texas found no significant differences in nematode populations between solarization and fumigation treatments. Weeds (yellow nutsedge) were most effectively suppressed by solarization.

Conclusions

What many farmers are finding is that when they adopt low-input methods, including careful management, gross returns decrease slightly, but net returns increase. For example, in a study of Illinois farmers covering eleven years (1976 to 1986) Robert Hornbaker found that farmers using the highest amounts of purchased inputs per acre harvested more bushels but earned less profit per acre compared with farmers using less input per acre. The study examined data from a sample of 161 farms drawn from the University of Illinois farm records system. The farms were ranked according to their per-acre expenditures for commercial fertilizers and agricultural chemicals, and the top one-fourth of the farms in this ranking were considered the "high-input" group. The quartile of farms having the lowest expenditure per acre are the "low-input" group. In 8 of the 11 years of his study Hornbaker found the high-input group's net income per acre was significantly less than that of the rest of the farms. On average during the 11 year period, the high-input group received \$37 per acre more gross income than the low-input group, a difference of 11 percent. But their net income per acre was \$29 less, a difference of 17.6 percent.

Many other examples could be cited, but these cases illustrate the kinds of technologies being developed and tested under the LISA program. Certainly not all low-input methods being tested are proving to be effective or profitable, but in general the outlook is optimistic. Par-

al., 1989). The organic treatment was designed in consultation with Georgia Organic Growers Association. The conventional treatment consisted of spraying the entire orchard

The 10 Guiding Principles of the Low-Input, or Sustainable, Agriculture Program

1. If a method of farming is not profitable, it cannot be sustainable.
2. Provide farmers with accurate, readily usable information on the impacts that low-input methods are likely to have on the farm's profits and long-term productivity of the soil, as well as the impact of water quality, human health risks, and other ecological concerns.
3. Some farmers can now profitably use low-input strategies which substitute scientific and managerial expertise for some off-farm, purchased inputs.
4. Profitability of low-input farming methods can be enhanced through properly designed and executed research and educational efforts.
5. The net result of a farmer adopting a specific farming method usually cannot be anticipated except in the context of a whole farm system plan taking into account labor and capital requirements, as well as the complex interactions among crops, livestock enterprises, soils, water, populations of pests and their natural enemies, and other environmental impacts.
6. A multiorganization approach—including interdisciplinary team efforts, meaningful participation of operating farmers, and involvement of public and private organizations—is essential to the success of this approach.
7. Soil conservation agencies, i.e., Cooperative Extension System and the Soil Conservation Service, must be full partners with the Cooperative State Research Service in the design and implementation of the low-input/sustainable program.
8. The low-input program should be administered at the regional level, with major decisions made by persons aware of local climate, soils, crops, and other conditions and with a minimum of administrative expense and bureaucratic hassle.
9. Sustainable systems are highly site-specific, and their successful use depends on the farmer's skills and attitudes. Each experiment must be defined in terms of weather, soil conditions, and level of management skills required.
10. Sustainable systems should be established on the farm gradually through carefully planned steps over time.

ticularly encouraging is the fact that a large and growing number of scientists and educators in universities, extension, as well as farmers and others in the private sector are forming project teams to design and carry out studies to develop and test low-input farming methods.

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J. Patrick Madden



Dr. J. Patrick Madden is a private consultant located in Glendale, California. He is currently directing field operations of the LISA program and serves as liaison between LISA and EPA. He was formerly a professor in the Department of Agricultural Economics and Rural Sociology at Pennsylvania State University, and co-managed USDA's Low Input/ Sustainable Agriculture (LISA) program since January 1988, when it was initiated. Dr. Madden has conducted research for many years on low input, regenerative,

and organic farming systems, and is the author of numerous published papers dealing with these subjects.

Paul F. O'Connell



Dr. Paul F. O'Connell, deputy administrator of USDA's Cooperative State Research Service, directs various special projects and program systems and provides leadership for a national endeavor to find alternative opportunities for U.S. farmers. Major program areas are aquaculture, industrial crops, small-scale farming, and the Low-Input/Sustainable Agriculture (LISA) program. For 3

years prior to his current position, Dr. O'Connell served as Special Assistant to the Assistant Secretary for Science and Education. He had previously served for 16 years in leadership positions in the Forest Service and Economic Research Service.

Key Contacts in USDA Agencies

Cooperative State Research Service LISA Program

Neill Schaller, Manager
U.S. Department of Agriculture
Suite 342, Aerospace Building
Washington, D.C. 20250-2200
(202) 447-3640

Extension Service National LISA Program

Dixon Hubbard, Manager
U.S. Department of Agriculture
Room 3851, South Building
Washington, D.C. 20250-0900
(202) 447-2677

Cooperative State Research Service

Paul O'Connell
Deputy Administrator
U.S. Department of Agriculture
Suite 342, Aerospace Building
Washington, D.C. 20250-2200
(202) 447-2860

Cooperative Extension Service

Vivan Jennings
Deputy Administrator, Agriculture
U.S. Department of Agriculture
Room 3851, South Building
Washington, D.C. 20250-0900
(202) 447-5623

Alternative Farming Systems Information Center

The Center, part of the National Agricultural Library, provides an information service on low-input, or sustainable, farming systems. The service includes literature searches, referrals, and document delivery for publications and other information materials.

For more information, write or telephone:

Alternative Farming Systems Information Center
National Agricultural Library, Room 111, USDA
10301 Baltimore Boulevard
Beltsville, MD 20705
(301) 344-3704
Dialcom AGS3098

Host Institutions in Regions

North Central

James A. DeShazer
University of Nebraska
Lincoln, NE 68583
(402) 472-2046
Dialcom AGS1451

South

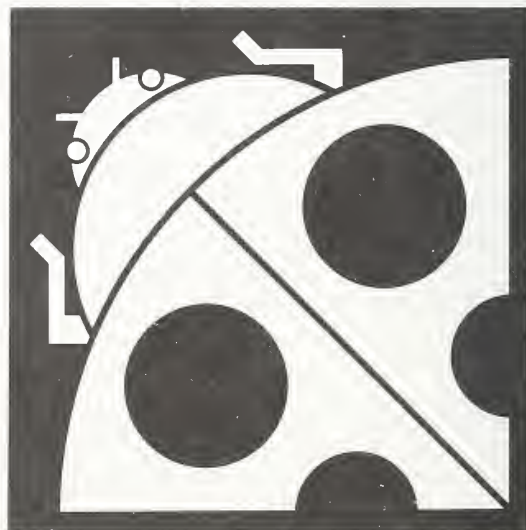
Charles Laughlin
University of Georgia
Athens, GA 30602
(404) 542-2151
Dialcom AGS631

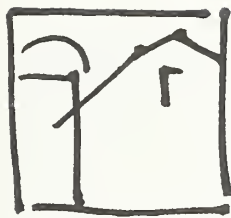
Northeast

Fred Magdoff
University of Vermont
Burlington, VT 05405
(802) 656-2630
Dialcom AGS2350

West

David Schlegel
University of California
300 Lakeside Drive, 6th Floor
Oakland, CA 94612-3560
(415) 987-0029
Dialcom AGS300





Alternative Farming Systems

The AFSIC Connection to LISA

The Alternative Farming Systems Information Center (AFSIC) was initiated during the Fall of 1985, when it became clear that Congress would incorporate the Agricultural Productivity Act into the 1985 Farm Bill. In that legislation great emphasis was placed on collection and dissemination of information relating to organic agriculture and low-input farming systems to farmers and others. Since NAL was already a leader in supplying information in these subject areas, it was logical to assume further responsibility by expanding its activities into a formalized information center. The coordinator selected to manage the center had been the NAL information specialist in organic farming and a member of the USDA Organic Farming Coordinating Committee for five years.

By the time the LISA program began in early 1988, the AFSIC had produced a large body of information products and had acquired an audience of users, who had received assistance, in both the private and public sectors. The Congressional funding authorization, which provided \$3.9 million for a program of research and education in alternative farming systems for the fiscal year 1988, called for \$100,000 to be transferred to NAL to support the Alternative Farming Systems Information Center. The fiscal year 1989 budget brought funding at the \$4.45 million level and support for AFSIC was continued by Cooperative State Research Service, through which LISA monies are channeled.

Benefits realized by NAL and its public from this supplemental support include: added staff to provide enhanced service to users, the ability to create new information products, and an expanded acquisitions budget to enlarge the NAL book and serials collections in low-input and sustainable agriculture literature.

Among the information products developed by the AFSIC staff are:

"Tracing the Evolution of Organic/Sustainable Agriculture: A Selected and Annotated Bibliography." Compiled by Jane Potter Gates. *Bibliographies and Literature of Agriculture*, Number 72. November 1988, 20 p.

Educational and Training Opportunities in Organic, Low Input or Sustainable Agriculture: A Directory. December 1988. 11 p.

"Searching AGRICOLA for Low Input/Sustainable Agriculture." Prepared by Karl R. Schneider and Maria Stransky. *Search Tips Series*, STS-02. December 1988. 29 p.

AFSIC in cooperation with the USDA Radio News Service has produced a 13-and-a-half-minute radio interview called "LISA and the Librarian." In this edition of *Agriculture USA* (No. 1665), Pat O'Leary of the USDA Radio News Service talks with Jayne MacLean, AFSIC Coordinator, about the information center and its services. An audio cassette of this interview may be borrowed from AFSIC by contacting the center at the address given below.

To obtain copies of the publications cited here or a list of several dozen *Quick Bibliographies* related to AFSIC subjects, send a self-addressed label with the request to:

Alternative Farming Systems Information Center
National Agricultural Library, Room 111
10301 Baltimore Boulevard
Beltsville, Maryland 20705

For additional information, contact AFSIC at the above address, or call (301) 344-3704.

--Jayne MacLean



News Notes

Supplemental Restores Lost Funds

The FY 1989 Emergency Supplemental Appropriations Bill, HR 2072, was passed by Congress last month and signed by President Bush on June 30, 1989. As Public Law 101-45, it provides the National Agricultural Library with \$1.0 million to restore the shortage caused by an error in the original enrolled bill. This restoration of funds was extremely important to NAL, since the Library had to defer some expenditures on new programs approved by both houses of Congress and had to reduce funding levels for several existing programs in order to cope with the consequences of the error, an 8% loss.

The \$1.0 million enables NAL to make additional amounts available for the Animal Welfare Information Center, Rural Information Center, Networking, and the Technology Transfer Information Center. As intended by Congress the original appropriation provides for a few new programs and for the inclusion of funds in NAL's appropriation base which were previously in the funding for other Agencies. Specifically, Congress granted funding for the continuation of the Rural Information Center, which had been supported by the Extension Service. Congress also funded the Animal Welfare Information Center in the NAL appropriation, rather than through the Animal and Plant Health Inspection Service (APHIS), which reimbursed NAL for its activities. Funding for new programs include provision for the establishment of a Technology Transfer Information Center and for the NAL network system.

For additional information contact:
Paul Bennett, Budget Officer
National Agricultural Library, Room 201
10301 Baltimore Boulevard
Beltsville, Maryland 20705
Or call (301) 344-1570.

Universal Agricultural Thesaurus Discussed

In a meeting on May 3, 1989, at the National Agricultural Library, Beltsville, Maryland, representatives from the National Agricultural Library (NAL), C.A.B. International (CABI), and Consultative Group on International Agricultural Research (CGIAR), initiated discussions on the need for a universal agricultural thesaurus to improve access to agricultural information in a more cost effective way. NAL's Director, Joseph H. Howard, led the discussion by describing NAL's decision to use a controlled vocabulary for indexing journal articles for the AGRICOLA database and the reasons for selecting the CAB Thesaurus. He stressed the high cost associated with the development of thesauri and the cost effectiveness of the current cooperative relationship between NAL and CABI. He also noted NAL's cooperative work with FAO AGRIS to establish links between AGROVOC terms and CAB Thesaurus terms.

Other participants voiced a variety of concerns relating to the use of existing thesauri as a base for developing such a universal tool. Stella Dextre Clarke, CABI, described CABI's mission which emphasizes the indexing and abstracting of agricultural literature for publication in printed journals. For CABI, a major concern with expanding the thesaurus is the difficulties it could cause for users of these journals. Pam Andre, NAL, noted some concerns related to automating such a universal tool including the need for distributed input and online searching as well as the capability to generate output products in a variety of formats. Sarah Thomas and Shirley Edwards, NAL, noted concerns related to cooperative content review and expanded lead-in vocabulary. All parties noted both the potential benefits and the costs involved in providing multi-lingual access.

Eleanor Frierson, CGIAR, spoke on behalf of the CGIAR centers. Her concerns related to the duplication of effort which currently exists as the centers develop customized thesauri with little potential for sharing.

After a period of discussion, the parties identified the issues of governance, form, and funding for further work, these being key to the successful development of a universal agricultural thesaurus. The following statement was framed to describe the focus for future action:

Universal Agricultural Thesaurus

The objective of the development of a universal agricultural thesaurus is to improve access to agricultural information in a more cost effective way. Such a tool would be used by libraries and information centers worldwide to provide subject access to materials in a variety of formats. Scholars

and researchers would use it as a pathway for access by subject to the vast amount of agricultural information available around the world and as an authoritative source of agricultural terminology such as taxonomic names. For those not fluent in English, a multilingual version would remove enormous obstacles of cost and inconvenience in their search for knowledge. Without such a tool, individual institutions would continue the costly and duplicative activities associated with local subject thesaurus development and validation of taxonomic names, and researchers would continue to be uncertain as to the completeness and accuracy of their research documentation.

It is the intent of the group to invite staff from FAO AGRIS, CABI, CGIAR, and NAL to participate in planning a discussion meeting to be held in October 1989 in Washington, DC. Discussion papers will be prepared on issues of governance and management, content, format, and systems.

Anyone interested in getting further information on the May discussions and the follow-on activities should contact Pamela Andre, Chief, Information Systems Division, National Agricultural Library, 10301 Baltimore Boulevard, Beltsville, MD 20705.

Or call (301) 344-3813; DIALCOM: AGS3056; Telefax: (301) 344-3675.

--Pamela Andre

RLIN Conspectus Project

The National Agricultural Library (NAL) and the Research Libraries Group (RLG) have been successful in a cooperative project to enter collection data into the *RLIN Conspectus* from a nonmember institution, Kansas State University. The *RLIN Conspectus* (RLIN, Research Libraries Information Network) is an online overview of the collection status and interests of participating institutions, based on subject groupings arranged according to the Library of Congress Class Schedules. Kansas State University (KSU) Library collection data for the Agriculture Division (S Class) is now available to all participants online. KSU reports an exceptional collection in the area of post-harvest technology and also collects many agricultural topics at the research level, but is not a member of the RLG nor a participant in the Association of Research Libraries (ARL) North American Collections Inventory Project (NCIP). So far, KSU is the only such institution to have its data in the *RLIN Conspectus*.

The purpose for this effort is to provide national access to information on the interests and holdings of substantive agricultural collections wherever they exist regardless of membership status in national programs. While most if not all *Conspectus* participants have outstanding collections in some areas, many nonparticipating institutions have outstanding collections in other areas. Knowledge of the location and extent of these holdings will provide added benefits

to the users of the *Conspectus*.

Libraries that have significant agricultural holdings but are not participants in either RLIN or in NCIP may wish to add data to the *RLIN Conspectus* concerning their collecting interests. NAL invites anyone interested in a project of this nature or in obtaining more information on this project to contact:

Leslie A. Kulp, Chief
Collection Development, Room 204
National Agricultural Library
10301 Baltimore Boulevard.
Beltsville, Maryland 20705

Or call (301) 344-1562

--Leslie A. Kulp

NAL Helps with 1890 Land-Grant Programs

On May 7-9 the USDA 1890 Task Force sponsored a joint training and orientation session for 1890 Liaisons, state Food and Agriculture Council (FAC) Chairpersons, and representatives of the 1890 Land-Grant Institutions and Tuskegee University. The focus of the three days was on programs of the agencies of the U.S. Department of Agriculture related to goals which support the 1890 Land-Grant Institutions and Tuskegee University. The sessions on the agenda took place at a variety of locations in Washington, DC, Maryland, and Virginia.

Samuel T. Waters, Associate Director, hosted a session at the National Agricultural Library on the afternoon of Tuesday, May 9. In his presentation Mr. Waters emphasized the programs of the Library that have aspects of benefit to the supported institutions. These include the following categories:

Research and Development

NAL supports research and development programs by providing these institutions with copies of journal articles and by providing other services such as database searching without charge. Other institutions reimburse NAL for these services. NAL also acquires and lends these institutions materials of special interest to their students and faculties, such as materials on minorities in agriculture.

Program Evaluation

Four 1890 land-grant universities were provided free software and hardware to participate in a project to test CD-ROM products developed by NAL. Non-1890 institutions paid for equipment and participation. Two 1890 land-grants participated in a similar project to evaluate video laser disks developed by NAL. Similar projects have involved the 1890 institutions in the past.

It is planned to utilize expertise from the 1890 land-grant libraries to participate in developing network systems intended to improve accessibility to agricultural information by users.

Training

The Library lends its AGRICOLearn program to these

institutions. (AGRICOLearn is an interactive videodisk system for training in the use of NAL's online database, AGRICOLA.) In the past NAL has had internships of several months to train 1890 librarians. Proposed funds in the FY 1990 budget are to be used in continuing this training program.

Facilities and Equipment

NAL provides surplus books and journals to the 1890 Libraries free of cost. It also provides to each of these institutions a subscription to the *Bibliography of Agriculture*, using NAL funds.

Fellowships, Traineeships, Recruitment, IPA's

NAL has a visiting scholar from North Carolina Central University, Durham, NC, to work on two projects in the current budget year: "Interactive Videodisc for Cataloging" and "Analyzing Technical Services Costs."

NAL is setting up a research internship from Southern University, Baton Rouge, LA, to work on a project "Planning and Preparation of Information Products relating to Low-Input Agriculture." It is anticipated this project will continue beyond the current year.

Administrative Infrastructure

Through meetings, notices, and telephone conversations, NAL provides guidance and counseling to library directors of the 1890 institutions on solving agricultural information needs on their campuses; using NAL and its services more effectively; working with agricultural researchers and teachers; introducing new agricultural information services; and finding funds.

Under the leadership of NAL's Director, Joseph H. Howard, the Association of College and Research Libraries (ACRL) division of the American Library Association requested and received funding from the Andrew W. Mellon Foundation to determine how ACRL might best assist the libraries at Historically Black Colleges and Universities. Mr. Howard is a member of ACRL's committee to plan projects for this purpose.

--Joseph N. Swab and Paul Bennett

NAL and NCSU Libraries To Test Digital Text Transmission

The National Agricultural Library (NAL) and the North Carolina State University (NCSU) Libraries have entered into a cooperative agreement to support a demonstration project that tests the technical feasibility and administrative structures necessary to capture, transmit, and receive machine-readable text at remote sites through the national electronic network, announced Joseph H. Howard, NAL Director, and Susan K. Nutter, NCSU Director of Libraries and project director.

Much of the U.S. and world literature of agricultural research remains difficult for researchers and scholars to ac-

cess because of the high cost of acquiring and processing printed materials. The National Agricultural Text Digitizing Project, a cooperative effort sponsored by NAL with 44 land-grant university libraries to test the use of optical scanning to transform full text and images to digital form for publication on compact disks (CD-ROM), has made a break-through in information capture, but the techniques for transmitting this machine-readable data to remote sites remain to be explored in depth.

The NAL and the NCSU Libraries will establish a telecommunications link which will enable NAL to transmit digitized page images of requested material to NCSU. Two nodes will be set up on the NCSU campus, one at the library and another at an agricultural research area. This arrangement will allow the assessment of both the complexities of long-range transmission of images and their distribution within a campus network. NCSU's academic computing community, under the direction of Associate Provost Henry Schaffer, will be an active partner with the library staff in this effort. NAL's portion of the project will be directed by Pamela Andre, Chief, Information Systems Division.

Upon successful completion of this project, NCSU in conjunction with NAL, will develop a proposal to establish a full-scale delivery operation among sites at multiple land-grant institutions. The third phase of this continuing effort will encompass the development of the means to establish a broad-based, digital-delivery system for the land-grant library community.

For additional information contact:

Pamela Andre
Chief, Information Systems Division
5th Floor, National Agricultural Library
10301 Baltimore Boulevard
Beltsville, MD 20705

Or call: (301) 344-3813.

--Pamela Andre

National Agricultural Text Digitizing Project Announces Aquaculture Compact Disk

On March 1, 1989, the National Agricultural Library (NAL) distributed the first National Agricultural Text Digitizing Project (NATDP) compact disk (CD-ROM), entitled *Aquaculture I*, to the 44 land-grant libraries participating in the project. The disk is the product of a cooperative effort by NAL and the

44 land-grants to test the use of optical scanning to capture full-text and images in digital form for publication on CD-ROM disks. The importance of this project is that it takes initial steps in opening library collections to electronic access and in preserving valuable previously-published materials in machine-readable form. The first of several pilot study disks, *Aquaculture I* will be evaluated for its content and ease of retrieval, and the feedback will be applied to the production of future disks.

Aquaculture I contains the text and page images of 62 reference publications on the topic of aquaculture. They were selected by NAL's Aquaculture Specialist, Deborah Hanfman, based on her own experience and on the advice of other aquaculture specialists. Included are books, technical reports, bibliographies, leaflets, bulletins, journal articles, etc., all published by the U. S. Government. These publications are not copyrighted and may be downloaded for personal use. The database can be searched using "TextWare Plus" from Unibase Systems, which is included on the compact disk.

In addition to the full texts themselves, the *Aquaculture I* disk contains short bibliographic records for each document (i.e., book chapter, report section, journal article, etc.), which include descriptors taken from the *C.A.B. Thesaurus*. Related documents, such as chapters in a book, have been "linked" so that the user can easily go from one to the other if desired. For each publication a MARC cataloging record has been added, and these are also linked to their associated documents.

Because it is part of a pilot study, *Aquaculture I* is available only to the participating land-grant libraries and to a limited number of government agencies that helped support its production. Other pilot study disks will include one on international agriculture, sponsored by the World Bank; one



photo: D. Starr

Judith Zidar, National Agricultural Text Digitizing Project Operations Coordinator (left), demonstrates the scanning portion of the text digitizing system while Connie Rinaldo, Graduate Assistant, operates the computer which controls the system and performs the conversion of optical images to digital data, and further into machine-readable ASCII text. At the right are John Stetka, Systems Manager for the project, Nancy Eaton, Director of Libraries at Iowa State University and National Project Director, and Pamela Andre, Chief, Information Systems Division and Principal Investigator for the project.



photo: D. Starr
Judith Zidar (right) holds the first copy of the Aquaculture disk (CD-ROM), the first product of the National Agricultural Text Digitizing Project, while (left to right) John Stetka, Nancy Eaton, Connie Rinaldo, and Pamela Andre join the celebration of this achievement.

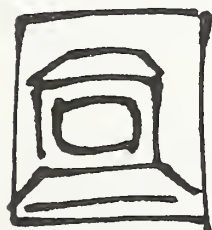
on Agent Orange; and a multi-disk set on acid rain. When these have been completed and evaluated, a second CD-ROM on aquaculture is planned and will be available for wide distribution.

For additional information contact:

Judith Zidar
Operations Coordinator, NATDP
5th Floor, National Agricultural Library
10301 Baltimore Boulevard
Beltsville, MD 20705

Or call: (301) 344-3853.

--Judith Zidar



AGRICOLA

AGRICOLA/CRIS Training Sessions Set for FY 1990

The National Agricultural Library (NAL) will sponsor a series of training courses on its master database, AGRICOLA (AGRICultural OnLine Access) and on CRIS (Current Research Information System). Basic and Advanced AGRICOLA workshops will be offered in addition to the CRIS workshops; these will be in both the Beltsville and downtown Washington areas. Both Basic and Advanced AGRICOLA workshops are taught by staff members at NAL. For all workshops, approximately one-half of the

class time will consist of lectures and the other half of hands-on experience at terminals or microcomputers.

The AGRICOLA Basic Workshop, a 3-day course, includes instruction in the basics of online searching, an introduction to the AGRICOLA database, and information on other agriculturally related databases such as the AGRIS database of the Food and Agriculture Organization of the United Nations. While the workshop is designed for people who have little or no previous experience in online database searching, a background in information retrieval or experience with computers will be helpful.

The AGRICOLA Advanced Workshop, a 1-day course, assumes that the participants have prior training or experience in online searching, and is an in-depth look at the files and fields of AGRICOLA. Subject, chronologic, geographic, and source access to the

database are featured discussion sections for the course. Although this workshop is offered in the same week as the basic course, consecutive enrollment is not recommended; time should be allowed to utilize and assimilate the basic concepts before registering for the Advanced Workshop.

The Current Research Information Systems (CRIS) is the computer-based documentation and reporting system of the U.S. Department of Agriculture (USDA) for ongoing publicly supported agricultural and forestry research in the United States. One-day CRIS workshops are taught by CRIS staff. Workshop participants must have prior training or experience in online retrieval. This prerequisite may be satisfied by attending NAL's 3-day AGRICOLA Basic Workshop or some of the basic seminars offered by commercial vendors.

Training Schedule:

Workshop	Dates	Location
AGRICOLA, Basic	Nov. 27- 29, 1989	Beltsville, MD
CRIS	Nov. 30	Beltsville, MD
AGRICOLA, Adv.	Dec. 1	Beltsville, MD
AGRICOLA, Basic	Mar. 5-7, 1990	Beltsville, MD
CRIS	Mar. 8	Beltsville, MD
AGRICOLA, Adv.	Mar. 9	Beltsville, MD
AGRICOLA, Basic	Apr. 30-May 2	Washington, DC
CRIS	May 3	Washington, DC
AGRICOLA, Adv.	May 4	Washington, DC
AGRICOLA, Basic	June 11-13	Washington, DC
CRIS	June 14	Washington, DC
AGRICOLA, Adv.	June 15	Washington, DC
AGRICOLA, Basic	July 23-25	Beltsville, MD
CRIS	July 26	Beltsville, MD
AGRICOLA, Adv.	July 27	Beltsville, MD
AGRICOLA, Basic	Sept. 17-19	Washington, DC
CRIS	Sept. 20	Washington, DC
AGRICOLA, Adv.	Sept. 21	Washington, DC

Workshops in Beltsville, MD, will be held at the Nation-

al Agricultural Library, 10301 Baltimore Boulevard, Room 1400. Workshops in Washington, DC, will be held at the D.C. Reference Center of NAL, U.S. Department of Agriculture, Room 1052 South Building, 14th and Independence Avenue (Smithsonian/Independence Avenue Metro stop). All workshop sessions will begin promptly at 8 a.m. and conclude at 4 p.m.

The courses are free to USDA and State land-grant personnel and to employees of other Federal, State, and local government agencies. Other participants must pay a tuition fee of \$150 for the 3-day AGRICOLA Basic Workshop, \$50 for the 1-day CRIS Workshop, and \$50 for the 1-day AGRICOLA Advanced Workshop. Tuition covers registration fee, online searching practice time, and instructional materials. A completed registration form and the fee, where applicable, must be submitted not less than 10 days before the date of the course; a reservation is made when the registration is received. All checks should be made payable to "National Agricultural Library." Registrants are responsible for their own lodging, meals, and transportation.

For a copy of the registration form, information on the amount of online searching required, or an AGRICOLA brochure, contact:

*Special Services Branch
National Agricultural Library, Room 1402
10301 Baltimore Boulevard
Beltsville, MD 20705*

Or call (301) 344-3875.

For more information on CRIS, call (301) 344-3850.

For those desiring AGRICOLA training, but who are unable to attend one of the training sessions described above, a self-instructional, computer-based, interactive videodisk training program, called AGRICOLearn, is available. Working at his or her own pace, a novice student with little or no experience in online searching may complete the 6 chapters with 1 to 4 lessons per chapter in about 16 to 20 hours, while experienced searchers may work through selected lessons in an hour or more. For appointments to use the NAL equipment and AGRICOLearn videodisk package at Beltsville, contact: (301) 344-3875. To make appointments to use the AGRICOLearn system at the D. C. Reference Center in USDA's South Building, contact: (202) 447-3434. For those outside the Washington, DC, area, the AGRICOLearn videodisk package may be acquired. For more information about AGRICOLearn, the various hardware and software which can operate it, or acquiring the disk package, contact: Robert Butler, (301) 344-1562.

--Lee Decker



Staff Update

Frances M. Mark



photo: D. Starr

On Friday June 30, Frances M. Mark retired after serving as a Cataloger at the National Agricultural Library for the 23 years since 1967. In recent years she served as the Senior Cataloger, responsible for work flow through the Cataloging Branch, distribution of work, teaching new catalogers, advising all of the catalogers as needed, revising cataloging, and doing the cataloging for difficult materials. In the time she has been with NAL, Ms. Mark has catalogued books and periodicals from all sources and

many languages, including German, French, and Czech and all of the other Slavic languages. She has served on various Library committees which worked on formats, subject and



photo: D. Starr

Frances Mark with her family at her retirement reception: her husband, Jerome Mark (L) and their daughter Karen with her husband, Anthony Tucker (R).

other authority files, automated records and databases, and chaired the committee which worked on NAL's implementation of changeover to the 2nd edition of the *Anglo-American Cataloging Rules*. She also served a term on the Board of the Associates of the National Agricultural Library.

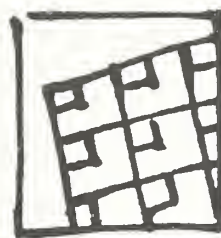
Prior to coming to NAL, Ms. Mark worked for a year at the Library of Congress before leaving with her husband for a tour of duty in Paris. She also worked at the Armed Forces Medical Library and for 5 years at the National Library of Medicine with intervals off to raise her daughter.

Ms. Mark's husband, Jerome Mark, is also retiring at the same time from his position as Associate Commissioner for Productivity and Technology at the Bureau of Labor Statistics. When asked about her plans for the future, Ms. Mark said, "I'm going straight to the beach for a few days, and then in a few weeks to the Canadian Rockies." Beyond that she indicated with a delightful laugh and a wave of her hands. She will of course continue her interest in the theatre and traveling.



photo: D. Starr

Verna Shen, Library Technician in the Cataloging Branch, performs a Chinese sword dance for Frances Mark and guests at at her retirement reception.



Agriculture Datebook

August 15: Southeast REA Borrowers Association Annual Meeting. Washington, DC; Hyatt Regency. Contact: (202) 447-4581.

August 15-16: Plum Island Animal Disease Center Meeting. Orient Point, Long Island, NY. Contact: (202) 447-3656.

August 16-18: Agricultural Relations Council Summer Seminar. Warren, VT; Sugarbush Inn. Contact: (202) 785-6709.

September 10-13: National Association of State Departments of Agricultural Annual Meeting. Atlantic City, NJ; Trump Plaza. Contact: NASDA, (202) 628-1566.

September 11: Public Health Service Data Conference. Chicago, IL. Contact: (301) 436-7725.

September 12-15: Radio & Television News Directors Association International Conference & Exhibit. Kansas City, MO; Kansas City Convention Center. Theme: "News Center '89." Contact: (800) 225-8183.

September 15: USDA Hispanic Heritage Month Opening. Washington, DC; USDA Patio. Contact: Vionnette Tidwell, OAE, (202) 382-1130.

September 17-22: American Water Resources Association Conference & Symposium. Tampa, FL. Contact: AWR, (301) 493-8600.

September 19: National Cattle Congress. Waterloo, IA. Contact: (202) 447-4623.

September 19-20: American Veterinary Medical Association Symposium. Washington, DC; USDA Jefferson Auditorium. Contact: AVMA, (312) 885-8070.

September 24-27: Small Farms Future Workshop and Roundtable. Columbia, MO; University of Missouri. Theme: "Expanding the Future of Small Farms: What Works!" Contact: Small Farms Future, 348 Hearn Center, Columbia, MO 65211.

September 24-27: National Convention of the Society of American Foresters. Spokane, WA. Contact: (301) 897-8720.

September 24-30: International Symposium on Forest Genetics, Breeding & Physiology of Woody Plants. Vobenech, USSR. Contact: Stan Krugman, USDA Forest Service, 1621 North Kent St., Arlington, VA 22209. (202) 235-8200.

September 25: Farm Credit System National Directors Conference. Minneapolis, MN. Contact: (202) 447-4623.

September 26-27: USDA Hispanic Employment Program Symposium. Chicago, IL; Blackstone Hotel. Contact: Vionnette Tidwell, OAE, (202) 382-1130.

September 27: Entomological Society of America Meeting. Washington, DC. Contact: (202) 447-5923.

September 27-October 5: Animal Breeding '89. Alma-

(See DATEBOOK, page 19, column 2)



New Serials Received at NAL

Asian Fisheries Science. Manila, Philippines: Asian Fisheries Society. Two no. a year. Vol. 1, no. 1 (Dec. 1987)-
SH295.A76

Awards, Honors, and Prizes. Detroit: Gale Research Co. 1st ed.- c.[1969]-
AS8.W3

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Ata, Soviet Union. Contact: Orbis International, Ltd., Suite 200, 3301 El Camino Real, Atherton, CA 94025.

September 28-30: National Hay Association Convention. S. Padre Island, TX; S. Padre Hilton Resort. Contact: NHA, P.O. Box 1059, Jackson, MI 49204.

October 1-5: First Annual Meeting of the Association for the Advancement of Industrial Crops. Peoria, IL. Contact: Dr. H. Naqvi, Department of Botany and Plant Science, University of California, Riverside, CA 92521. (714) 787-4643.

October 2: Midwestern Governors' Association Conference. Milwaukee, WI. Contact: (202) 447-4623.

October 3: Alfred M. Landon Lecture on Public Issues. Manhattan, KS. Contact: (202) 447-4623.

October 3: Association for Advancement of Industrial Crops Meeting. Peoria, IL. Contact: (202) 447-5923.

October 3: Cooperative Rally 25th Anniversary. Duluth, MN. Contact: (202) 653-6976.

October 4-8: World Dairy Expo. Madison, WI.

October 4-11: 16th International Grassland Congress. Nice, France. Contact: Secretariat du XVI Congrès International Des Herbages, A.F.P.E., I.N.R.A., Rue de St. Cyr, 78000 Versailles, France.

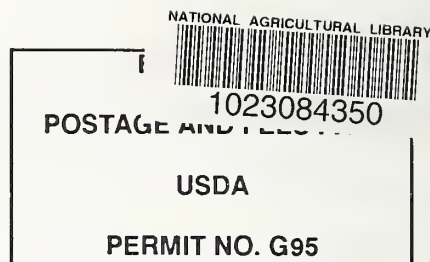
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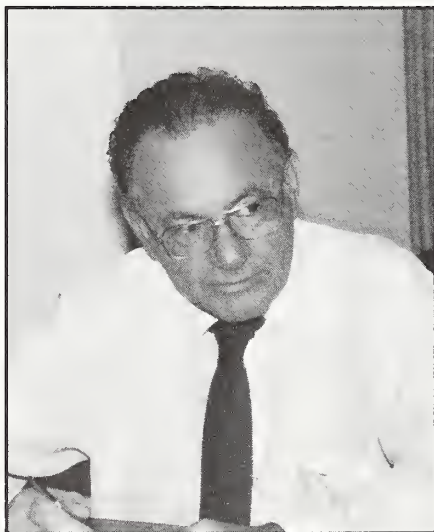
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Ruth Elazar, Information Center Director of the AGRIS Center in Israel, and Joseph Elkana, Consul for Agricultural Affairs, Embassy of Israel, Washington, DC, visited NAL on June 23, to discuss their concerns and needs with Joseph Howard, NAL Director, and Mary Lassanyi, Coordinator of the Agricultural Trade and Marketing Information Center, and to see demonstrations of the National Agricultural Text Digitizing Project, the Regional Information System for African Aquaculture (REGIS), and the Magic Wand/Hand-Held Scanner. They also attended demonstrations of other NAL technology applications at the New Technology Demonstration Center.

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